

upon which those measures were to have been founded.

The first of these plans bore date in 1824, and was projected by Sir F. Trench. Its object was to embark a portion of the northern shore of the river between London and Westminster bridges, and to make it available as a public thoroughfare. The proceedings consequent upon that plan, including the formation of a public company to carry it into effect, are detailed at some length in his "Collection of Papers relating to the Thames Quay," published in 1827.

Sir Frederick Trench, and the other promoters of the undertaking, after memorializing the corporation as to its rights of easement, and the Crown as to its rights over the soil, petitioned Parliament for a Bill on the 15th of February, 1825. On the 18th of the following month the question, that leave be given for its introduction, was carried by a majority of 40 in a house consisting of 130 members. It was suggested, however, that the information then presented as to the defect which the removal of the bridge might produce, was too imperfect for immediate legislation, and after a petition against the measure, presented on the 15th of April, it appears to have been dropped.

On the 23rd of March, 1840, the corporation of London applied to Parliament for power to embark both sides of the river between London and Vauxhall bridges. Adverting to the proceedings in 1825 before the select committee on the building of the new Houses of Parliament, to the embankment immediately consequent upon those proceedings, and to the expediency of the continuation of an embankment at Westminster for the improvement of the navigation of the river, it was the object of the application in 1840 to show that, upon considerations irrespective of the navigation, an embankment so continued would be beneficial to the metropolis at large, and as such deserving the aid of Parliament. On the 30th of the same month a select committee was appointed, "to report its opinions and observations thereupon to the House, together with the best means of carrying the same into effect."

The plan which formed the basis of this petition had been prepared by Mr. Walker, under the direction of the corporation, and embraced the embankment on both sides of the river, between London and Vauxhall bridges. On referring to the copy of this plan appended to our report, it will be found to differ from the later suggestion of the same gentleman, in including the line of shore, and that upon the shore two arches of Waterloo-bridge, and in other particulars of minor interest and importance, which it is not essential to specify.

The committee suspended its sittings on the 29th of July, 1840, without bringing its inquiries to a close. It reported that "several petitions both for and against the measure having been referred to the committee of the House, and many witnesses, both for and against the intended plan, being proposed to be examined, it was obliged, by the near approach of the prorogation of Parliament, to conclude the inquiry without the examination of many plans for the embankment of the river, or the consideration of any plan for the improvement of the navigation without any alteration of the present line of shore; and that upon the general subject, therefore, of the improvement of the navigation, with or without any embankment, in the present state of the inquiry, it gave no opinion." From that period, it further notice of the subject ceased in Parliament.

In July, 1841, Sir Frederick Trench addressed a letter to Viscount Duncannon, then Chief Commissioner of your Majesty's Woods, &c., stating the means by which the plan of Mr. Walker and his own might, in his opinion, be combined. At that period, however, a general survey of the river was understood to be in progress, from Putney to Gravesend, under the direction of Mr. Walker, on the part of the corporation. Captain Bullock, with the sanction of the Admiralty, Mr. Saunders, the water-bailiff to the city, and Mr. Lush, the clerk of the works to the Navigation Committee. The reports and plans, the result of this survey, together with a report from certain members of that committee, were laid before a common council holden on the 20th of Jan.,

1842, and subsequently printed for the use of the court. On application to the Navigation Committee we were furnished with copies of these documents.

Upon the appointment of this commission, Sir Frederick Trench addressed a letter to our chairman, expressing his desire to lay before us his plan of "a railroad between Dugate-dock and Hungerford-market, with a second line from Hungerford to Westminster-bridge." His object, as stated in that letter, was "to connect this plan with the erection of an embankment for the improvement of the navigation of the river, and embracing these with the removal of existing nuisances, to secure the advantages upon the estimate of the metropolis, not only without any demand upon the public purse, but so as to produce a large surplus after defraying the whole expense of the embankment proposed by Mr. Walker."

In compliance with his desire, the commission requested the attendance of Sir F. Trench, and examined him at some length as to the objects and alleged advantages of his plan, its practicability, and its probable expense. In doing this, it was necessary to assume the adoption of the principle of Mr. Walker's plan of embankment, Sir F. Trench's calculations and arrangements having been adapted to that plan.

PLAN OF SIR FREDERICK TRENCH.

The plan of Sir F. Trench is explained in a statement addressed to the commission at the commencement of his evidence. Referring to the terrace at Nine and Gendal, he said: "Between those terraces and that which I propose, there would be this difference—that, instead of a promenade, the top of the colonnade along the north bank of the Thames would be occupied by that which would be the source of all the profit which I anticipate, namely, railway communication. Mr. Walker's line of embankment is before the commission. My proposal is to adopt that line, with some trifling alterations, and on it to erect a terrace, supported by columns, upon which a railroad shall be constructed. I suppose the columns to be 14 feet high, and a covered promenade under the terrace of that height. Between this covered walk and the river there may be a trottoir, with steps descending into the river where required. On the other side will be a passage for carriages and horses; and commercial operations may be carried on under the covered way. Wagons can back to the river between the columns; machinery can lift the coals from the barges, and the material of the wharves can be taken to the bank; and the occasional interruption to passengers along the promenade will not be one tithe as much as that which occurs every hour of the day from the traffic of omnibuses in Chapside and the Poultry." The proposition of Sir F. Trench thus contemplated uninterrupted lines of communication, both for foot passengers and the ordinary traffic of a railway, extending from Westminster-bridge to Dugate-dock—the former at an elevation of 1 feet, the latter at an elevation of 18 feet above Trinity high-water datum, without traversing the roadways of the respective bridges, without blindness to the trade of the river shore, and without prejudice to the navigation.

Practical difficulties, it appeared to the commission, presented themselves to the execution of this plan, and these were not denied by Sir Frederick Trench's assumption of Mr. Walker's line and principle of embankment for its basis. Of Mr. Walker's plan, as explained in his evidence before the select committee of 1840 (to which only Sir Frederick Trench could be referring in his address to the commission), the line of the embankment was the only point to be positively fixed upon. The execution of it was to be left to the voluntary determination of individual proprietors, and its projector could assign no definite or even probable time for its completion.

Assuming the commission, however, contrary to Mr. Walker's design, to be prepared to recommend the compulsion and expense inevitable associated with any other course of proceeding, the principle of the plan of Sir Frederick Trench to carry his railway under Blackfriars-bridge suggested the first difficulty. The embankment of Mr. Walker was to include only the northernmost, and consequently the lowest of its arches on the Middlesex shore, the

centre of which above Trinity high-water datum is only 16 feet 6 inches. Allowing some provision to be made against the occasional occurrence of higher tides, it would be necessary, therefore, in the construction of the embankment, to bridge this roadway by at least three feet (Mr. Walker had taken for his leaving a disposable elevation, for the colonnade, together with the traffic upon the roadway, beneath and above it, of something between 12 and 13 feet).

As the average height of the embankment and colonnade would, according to the proposal of Sir F. Trench, be 18 feet, it became evident that the line of the railway on the colonnade, independently of the space required for the carriages intended to be moved upon it, could not be made to pass under the arch without material deviation from the height assigned to it. It was manifest, indeed, that unless the line of the railway were actually brought down to the same level as that of the road upon the embankment itself, the traffic upon it could not be carried under the bridge; and further, that in order to effect this object, a gradual depression of the railway, occupying on either side of the arch a space of 1,000 feet, must be resorted to. Such was, in fact, the proposal ultimately made by the projectors for overcoming this difficulty.

But it was obvious that, by these depressions of the upper line, the confinement of the lower roadway must be destroyed, and the advantages of a promenade as well as of a carriage-way be thereby excluded. The use of the embankment for the purposes of trade would also be taken away within a considerable space adjacent to the bridge; and this circumstance created an objection of so much the greater importance, as the business transacted at that part of the river is considerable.

These difficulties, inseparable from the adoption of the first arch of the bridge for the purposes of this plan, led to the suggestion by its promoters of substituting the second arch for the same object. This would not, indeed, have been in accordance with the plan of Mr. Walker, upon which that of Sir F. Trench professed to be grafted, but it was observed, on the part of the commission, that the line of the embankment might be so bent as to conform to Mr. Walker's plan, but not for an embankment with a railway."

Little doubt, we conceive, can exist, that whether for the railway, the continuance of a public promenade, or the important interests of the trade in this locality, the second arch of Blackfriars-bridge would in all respects suggest itself as a defensible expedient; it would involve additional heavy expenditure if a line of solid embankment were adopted, after less interruption to all those purposes to which wharfrage is generally applied. But interests of much greater importance, as it appears to us, intervene to determine this part of the question. The width of the river at Blackfriars-bridge is only 778 feet; the deductions from its streamway for an embankment including one arch only, and for piers, may be taken at 270 feet; its navigable channel, consequently, would remain little more than 700 feet. It would be impossible, therefore, we conceive, at this point, to project any solid embankment into the river beyond the arch in question, with a due regard to the interests of the navigation.

A further difficulty opposed to the plan of Sir F. Trench was, perhaps, in some measure anticipated, when we referred to, the necessity attending the completion of that of Mr. Walker. Mr. Walker's plan comprised recesses of considerable width. To carry a railway across these, at an elevation of 18 feet, might of course be practicable; but it is obvious, upon inspection of the plan, that the character, in the direction, and upon the level proposed by Sir Frederick Trench for his quay, would be adverse to all the objects for which these recesses were designed; and that, if the two are to form part of the same measure, the embankment throughout its whole line must be completed in the first instance.

Having pointed out these preliminary, and as it appears to us, insuperable objections to the plan of Sir Frederick Trench, we deem it to be superfluous to advert to minor difficulties affecting the expediency, the utility, or the financial details of his suggestion, combined with those of Sir Frederick Smith and Mr.